

WHAT IS CLAIMED IS:

1. A system for heating and pressing a mat of material having at least one face surface and comprising a thermosetting adhesive, the system comprising:
 - 5 a press for accepting the mat;
 - at least one sensor for sensing a parameter indicative of heat within a core of the mat; and
 - a control system connected to the sensor to accept a signal therefrom and configured to cause the press to apply vibratory forces to the face surface when the signal indicates that the parameter is below a predetermined reference level and to cause the press to apply a non-vibratory force to the face surface when the parameter is above the predetermined reference level.
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2. A system according to claim 1 wherein the parameter comprises one or more of: a temperature of the core of the mat and a vapour pressure within the core of the mat.
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3. A system according to claim 1 wherein the parameter comprises one or more of: ultrasonic emission from the mat and radiation emission from the mat.
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4. A system according to claim 2 wherein the press comprises a pressing face for applying the vibratory and non-vibratory forces to the mat.
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5. A system according to claim 4 wherein the pressing face provides heat to the mat by conduction of heat from the pressing face.
6. A system according to claim 2 wherein the press comprises a conveyor for transporting the mat and for providing heat to the mat by conduction of heat from the conveyor.
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7. A system according to claim 2 wherein the press comprises a source of steam for providing heat to the mat.

8. A system according to claim 2 wherein the vibratory forces have a frequency in a range between 0.2-2.0 Hz.
9. A system according to claim 4 wherein the vibratory forces are applied by reciprocatably moving the pressing face over a distance in a range between 0.2-3.0 mm.
10. A system according to claim 1 wherein the predetermined reference level corresponds with a temperature that is below a curing temperature range of the adhesive.
11. A system for heating and pressing a mat of material having at least one face surface and comprising a thermosetting adhesive, the system comprising:
 - a press for accepting the mat;
 - 15 at least one sensor for sensing a parameter indicative of heat within a core of the mat; and
 - 20 a control system connected to the sensor to accept a signal therefrom and configured to cause the press to apply vibratory forces to the face surface when the signal indicates that the parameter has reached a first predetermined reference level and to cause the press to apply a non-vibratory force to the face surface when the parameter has reached a second predetermined reference level.
12. A system according to claim 11 wherein the parameter comprises one or more of: a temperature of the core of the mat and a vapour pressure within the core of the mat.
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13. A system according to claim 11 wherein the parameter comprises one or more of: ultrasonic emission from the mat and radiation emission from the mat.
- 30 14. A system according to claim 12 wherein the press comprises a pressing face for applying the vibratory and non-vibratory forces to the mat.

15. A system according to claim 14 wherein the pressing face provides heat to the mat by conduction of heat from the pressing face.
16. A system according to claim 12 wherein the press comprises a conveyor for transporting the mat and for providing heat to the mat by conduction of heat from the conveyor.
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17. A system according to claim 12 wherein the press comprises a source of steam for providing heat to the mat.
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18. A system according to claim 12 wherein the vibratory forces have a frequency in a range of 0.2-2.0 Hz.
19. A system according to claim 14 wherein the vibratory forces are applied by reciprocatively moving the pressing face over a distance in a range between 0.2-3.0 mm.
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20. A system according to claim 11 wherein the second predetermined reference level corresponds with a temperature that is below a curing temperature range of the adhesive.
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21. A system for pressing a mat of material having at least one face surface and comprising a thermosetting adhesive, the system comprising:
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a press for accepting the mat;
at least one temperature sensor for sensing a temperature of a core of the mat; and
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a control system for accepting a signal from the temperature sensor and, in response to the signal, causing the press to apply vibratory forces to the mat normal to the face surface when the temperature of the core of the mat is below a predetermined temperature, and programmed to cause the press to apply a non-vibratory force to the mat normal to the face surface when the temperature of the core of the mat is above the predetermined temperature.

22. A system according to claim 21 wherein the predetermined temperature is below a curing temperature range of the adhesive.

23. A system for pressing a mat of material having at least one face surface and comprising a thermosetting adhesive, the system comprising:
5 a press for accepting the mat;
at least one temperature sensor for sensing a temperature within a core of the mat; at least one vapour pressure sensor for sensing a vapour pressure within a core of the mat; and
10 a control system for accepting signals from the temperature sensor and the vapour pressure sensor, the control system configured to cause the press to apply vibratory forces to the face surface when the signal from the vapour pressure sensor indicates that the vapour pressure within the core of the mat has reached a predetermined vapour pressure level and to cause the press to apply a non-vibratory force to the face surface when the signal from the temperature sensor indicates that the temperature of the core of the mat has reached a predetermined temperature level.
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24. A system according to claim 23 wherein the predetermined temperature level is below a curing temperature range of the adhesive.
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25. A system for pressing a mat of material having at least one face surface and comprising a thermosetting adhesive, the system comprising:
25 a press for accepting the mat;
at least one sensor for monitoring a parameter indicative of heat within a core of the mat, the sensor providing a first trigger signal when the parameter reaches a first predetermined reference level and a second trigger signal when the parameter reaches a second predetermined reference level; and
30 a control system connected to receive the first and second trigger signals, the control system configured to cause the press to apply vibratory forces to the face surface in response to the first trigger signal and to cause the press to apply a non-vibratory force to the face surface in response to the second trigger signal.
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